NEW PROGRAM PROPOSALS: MSPH AND Ph.D. IN BIOSTATISTICS – DECISION SCIENCE UNIVERSITY OF LOUISVILLE

ACTION
Agenda Item D-1-b
January 24, 2000

Recommendation:

That the Master of Science in Public Health and the Doctor of Philosophy programs in Biostatistics – Decision Science proposed by the University of Louisville be approved and registered in CIP 51.2204 (Health and Medical Biostatistics).

Rationale:

- The University of Louisville and the University of Kentucky recently completed work on an agreement to create the Kentucky School of Public Health. UofL will focus on training health professionals for careers in research. UK will focus on professional degree programs emphasizing the practice of public health. The proposed programs fit within this division of labor.

- The proposed programs are designed to train individuals seeking careers developing and using statistical tools to conduct research in biology, medicine, and health. Researchers in this emerging field work primarily in academic health centers and private medical research facilities. Kentucky currently does not have graduate programs designed for this purpose.

- The proposed programs are important elements of:

  - The mission of the University of Louisville to be "a research university that places special emphasis on the research and service needs of Kentucky's urban areas."
  - The responsibility of the UofL School of Medicine to meet the educational, research, and patient care needs of Kentucky.
  - The effort by the city of Louisville to strengthen and build its bio-medical sector.
  - The goal of the Kentucky School of Public Health "to foster the development and coordination of high-quality graduate and post-graduate academic teaching, research, and community services programs that address the public health needs of Kentucky."

- Kentucky's population continues to be categorized as "high risk" across most measures of its health. The proposed programs will provide the context for research that is crucial to improving the health of this population.

- UofL and the state of Kentucky need to develop a critical mass of biostatisticians and decision-scientists in order to secure greater external funding for research projects.

An executive summary submitted by UofL is attached to this agenda item.

Staff Preparation by Bill Swinford

Executive Summary
Biostatistics-Decision Science

The proposed program in Biostatistics-Decision Science responds to a growing need at the University of Louisville and within the Louisville health care community for highly trained biostatisticians and decision scientists. It will support the mission of the University of Louisville and its School of Medicine by providing a high quality public health graduate program for UofL faculty, local health care professionals seeking to enhance their skills, and students pursuing academic research careers in biostatistics and decision science. No other program of its kind is available in the Commonwealth of Kentucky.

I. Mission

The University of Louisville serves as Kentucky's urban metropolitan university and as the principal source of instruction, research and service programs in the metropolitan area. The University's Mission Clarifying Statement indicates that the University will offer "a concentration of doctoral programs in the health sciences." The UofL *Strategy for Excellence*, the 1998-2004 strategic plan, recognizes the need to expand and enhance the University's research activities in order to achieve "recognition as a premier nationally-recognized metropolitan research university." And the *Challenge for Excellence* program identifies medicine and health sciences as research areas of distinction and opportunities for excellence. The *Challenge* also sets the goal of becoming a Carnegie Research I institution. The proposed program in Biostatistics-Decision Science will support the University's educational and research goals and assist the University in its efforts to achieve Research I status.

The proposed program, developed to respond to local health care, research and public health needs, reflects and anticipates changes in the health care environment. The development of health management organizations and changes in federal reimbursement policies have produced a need for new educational programs in public health areas, particularly at the graduate level. The Louisville Medical Center Development Corporation (LMCDC) is now engaged in a major reshaping and rebuilding effort. As a major partner in the LMCDC, the UofL must develop this public health graduate program in Biostatistics-Decision Science to provide the personnel necessary to support the growth in research that will result from this effort. The graduates of the proposed program will find positions at local, regional, and national health care organizations that conduct public health research and set policies and guidelines.

II. Program Description

The doctoral program in Biostatistics-Decision Science has been designed to provide student access to much-needed public health educational programs and capitalize on the strengths and areas of expertise of current faculty. To meet the needs of both post-baccalaureate and post-doctoral students, the program has two exit points: the MSPH and

the Ph.D. in Biostatistics-Decision Science. The Ph.D. program is designed as an 84-credit hour program with an embedded 36-hour MSPH program. Students exiting the program with the MSPH will complete 20 hours of required courses; 10 hours in either the Biostatistics or Decision Science concentration, including electives; 2 hours of practicum; and 4 hours of thesis research. The curriculum begins with a core of traditional biostatistical courses that are purposefully mathematically rigorous. Students will be well-grounded in calculus, matrix algebra, probability theory and mathematical statistics as they are used and applied to health care problems before proceeding to the focused courses in biostatistics or decision science. The practicum experience will typically involve on-site collaboration work at a local health care organization, for example, the Jefferson County Health Department, the American Red Cross, or the Family Health Centers.

The students completing the entire doctoral program will complete 12 additional hours of required courses, 12 additional hours of electives (determined in consultation with an academic advisor) and 24 hours of dissertation research. When the program is initiated, students will be able to complete the MSPH with a concentration in Biostatistics or Decision Science and the Ph.D in Biostatistics-Decision Science with a concentration in Decision Science. We anticipate adding the Biostatistics concentration for the doctoral degree in the future. Web-enhanced and web-based courses are planned. Initially, course material will be posted at course web sites and students will be able to communicate with classmates and faculty via Internet. The delivery of complete courses via the KCVU is also a goal of the program.

An evaluation plan for the program has been developed. An internal and external advisory committee and a curriculum committee have been formed. Students will complete evaluations of all courses and faculty and participate in exit interviews. Graduate and employee surveys will be conducted. The Program Director will be responsible for coordinating all aspects of assessment and will produce an annual report using the results of the various assessment tools to improve the program.

III. Supportive Data

Biostatistics is concerned with statistical methodology for various kinds of quantitative studies in biology, medicine and health. The biostatisticians who graduate from the program will design studies, analyze complex data sets and provide scientific inference expertise. Decision Science is an emerging, cutting-edge discipline that moves beyond traditional biostatistics graduate programs by providing researchers with additional tools in the form of an evidence-based system for decision making. In essence, most policies that affect the health of Kentucky's citizens are formulated at some level using decision science. The decision scientists who graduate from the program will be recruited by health care organizations and clinical research teams that need scientists to model or structure complex decisions, establish utilities for possible outcomes and carry out complete decision analyses – both for clinical procedures and policies.

Currently, no data are available on personnel requirements for master-level biostatisticians or decision-scientists or doctoral-level decision-scientists in the Kentuckiana area. However, a 1993 national report indicated that the ratio of advertised biostatistician positions to available graduates was roughly 4:1, almost double the 1985 ratio. Moreover, anecdotal evidence indicates that prospective employers of biostatisticians in the Kentuckiana area often are forced to recruit from outside the area. As the scrutiny of health care costs, procedures, and policies increases, the need for highly trained biostatisticians and decision scientists is likely to increase as well. Interest in the proposed program is strong. During the summer of 1999, five students seeking decision science expertise enrolled in one of the program courses, even though no degree program was in place. These students illustrate both the need for and interest in this program. There are currently no graduate or undergraduate programs in Biostatistics or Decision Science in the Commonwealth of Kentucky. The University of Kentucky currently has an MS and Ph.D. in Statistics and Eastern Kentucky University has an MS in Mathematical Science with a Statistics option. An informal statewide consortium on public health education has been formed. This group will focus on collaboration to share expertise, facilities, faculties and courses in public health. The development of transfer arrangements for most of the foundational courses in the program is anticipated.

III. Resources

The current space, staff support, computers, and local area network (LAN) are adequate to launch the program. The program and program faculty who will have major responsibility for the program will be housed in the Carmichael Building. A seminar room and large classroom have been assigned to the program. Computers with Internet access are available to students, and library resources are adequate to support the program. Eleven ranked faculty will launch the program, each devoting between 10-50% of time to the program. The Health Sciences Center at the University of Louisville has committed itself to the development of this cutting edge educational program in public health. In addition to Departments of Family and Community Medicine and Medicine funds that will be reallocated to this program, the Vice President for Health Affairs has committed hospital surplus funds to ensure that this program, when launched, will be successful.